Top Secret

[redacted]

DIRECTORATE OF
INTELLIGENCE

Industrial Facilities
(Non-Military)

Basic Imagery Interpretation Report

Fu-shun Shale Oil Plant West

Fu-shun, China

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RCS 13/0279/69

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DATE June 1969

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
Imagery Analysis Service

RCS - 13/0279/69

INSTALLATION OR ACTIVITY NAME		COUNTRY
Fu-shun Shale Oil Plant West		CH
UTM COORDINATES: 51TWG725340	GEOGRAPHIC COORDINATES: 41-51-00N 123-52-11E	WAC-PIC No. 25X1 0290-36-H

MAP REFERENCE
67th RTS. USATC Series 200, Sheet M0290-11HL, 4th edition, January 1966, Scale 1:200,000 (SECRET 25X1

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LATEST IMAGERY USED	NEGATION DATE (If required)
	Not Required

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ABSTRACT

This report is a detailed description of Fu-shun Shale Oil Plant West. The production facilities at the Fu-shun Shale Oil Plant West were complete and in operation when first observed on photography o Except for the removal of two shell still batteries, there has been no significant construction activity since 1962. The plant produces various blends of gasoline, fuel oil, lubricating oil and possibly grease. By-products are ammonium sulfate and paraffin. The plant appeared to be in operation on all photography studied from 16 June 1962 through 22 April 1969. 25X1

This report includes a detailed line drawing and photograph of the installation, mensuration of significant features, a chronology of construction, a functional analysis, and reference data.

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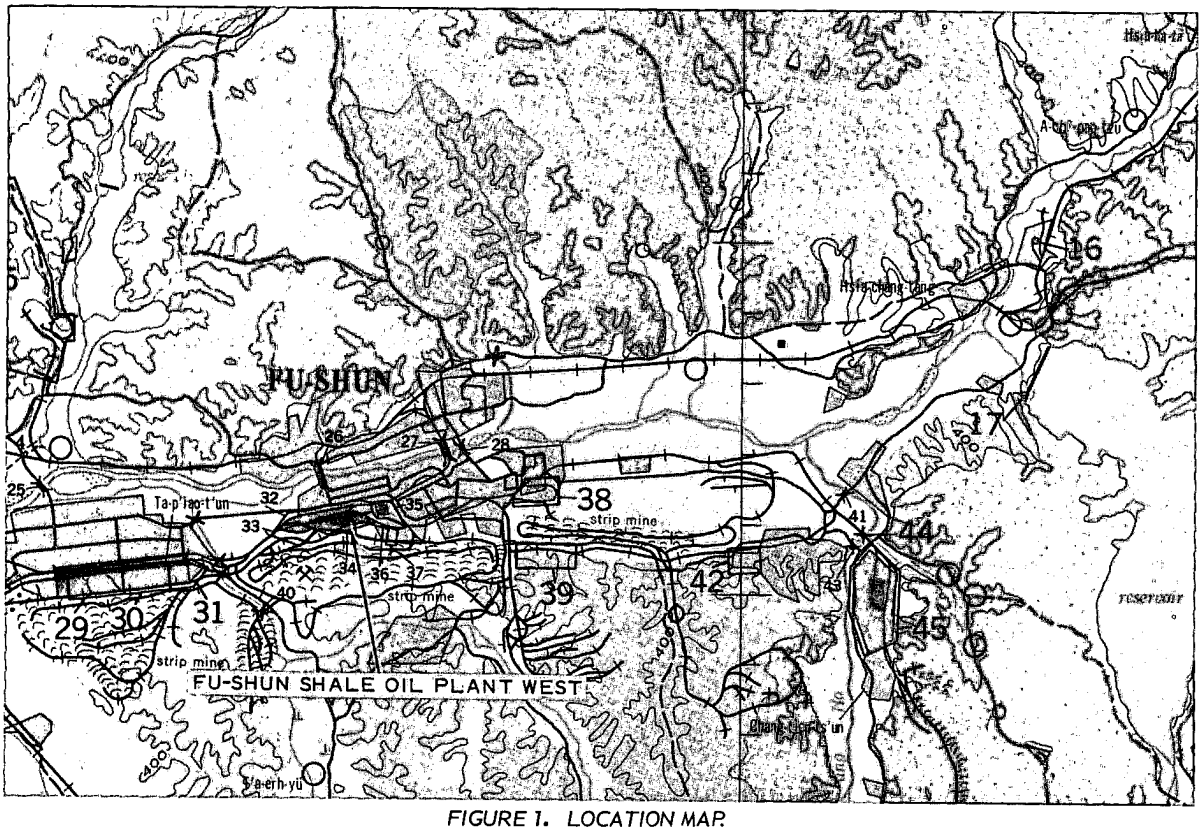

FIGURE 1. LOCATION MAP.

INTRODUCTION

The Fu-shun Shale Oil Plant West, one of the two shale oil plants in the Fu-shun Complex, is located immediately west-southwest of Fu-shun.

The Fu-shun Shale Oil and Chemical Plant East [redacted] is located 8 nm to the east-southeast of the plant. The Fu-shun Thermal Power Plant (Tai-kan-ton) [redacted] is located 0.5 nm to the east.

This shale oil plant processes shale from a large strip mine located 0.75 nm to the south. The shale is transported to the plant by railroad. The plant is also well served by roads.

BASIC DESCRIPTION

Physical Features

The plant occupies a rectangular area of approximately 5,385 by 930 feet, enclosing approximately 115 acres. It is very compact in design, unlike the Fu-shun Shale Oil and Chemical Plant East. There are no visible indications of security.

Operational Functions

The plant extracts oil from shale and refines this oil to produce various blends of gasoline, fuel oil, lubricating oil, and possibly grease. By-products are ammonium sulfate and paraffin. Ammonia absorbed from the shale oil retorts is combined with sulfuric acid from the plant's two sulfuric acid plants to form ammonium sulfate. There is no evidence that natural crude oil is being refined at this facility, as it is at the Fu-shun Shale Oil and Chemical Plant East.

Status and Activity

All of the plant's primary facilities were constructed prior to June 1962. There have been no significant additions since that time, but two shell still batteries have been removed from the northwest corner since 1964.

The plant appeared to be in operation on all photography studied from June 1962 to April 1969, as evidenced by smoke and steam emissions from the plant facilities and the presence of railroad rolling stock.

Facilities and Equipment

The following table lists the functional areas and facilities within the plant. Precise identification of equipment was not always possible and occasionally is based upon relative positioning within the plant or by association with known equipment.

TABLE I

EQUIPMENT AND FACILITIES AT THE FU-SHUN SHALE OIL PLANT WEST
(ITEMS ARE KEYED TO FIGURE 3)

Area	Functional Description	Equipment
A-1	Crude Oil Storage	1 cylindrical tank [redacted] 25X1 3 cylindrical tank 2 cylindrical tanks (20 ft diam) 1 open reservoir 3 unidentified buildings

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Area	Functional Description	Equipment
A-2	Site of Former Shell Stills	1 storage building Former shell still foundations
B-1	Shell Stills	4 covered shell still batteries 5 cylindrical tanks (20 ft diam)
B-2	Probable Deasphalting and Solvent Extraction Area	3 vertical processing units 2 pipe furnaces 1 possible compressor building 4 unidentified buildings 7 horizontal pressure tanks (40 ft long) 5 cylindrical tanks (55 ft diam)
C-1	Probable Dewaxing (Paraffin) Plant and Finished Product Storage	1 large vented dewaxing building 4 unidentified buildings 2 cylindrical tanks [redacted] 25X1 5 cylindrical tanks (40 ft diam) 3 cylindrical tanks (30 ft diam) 4 cylindrical tanks (15 ft diam)
C-2	Probable Clay Treatment Facilities	3 processing buildings 3 cylindrical tanks (40 ft diam) 5 cylindrical tanks (25 ft diam)
D-1	Possible Treating Facility	1 processing building 17 cylindrical tanks (20 ft diam) 2 cylindrical tanks (40 ft diam)
D-2	Gas Processing Area (Light Ends)	16 large vertical processing units 4 small vertical processing units 2 compressor buildings 2 banks of condensers/heat exchangers/ cooling coils/accumulators 1 control building 4 unidentified buildings
E-1	Cooling Facility	1 large induced-draft cooling tower
E-2	Products Shipping and Storage	3 storage buildings 3 cylindrical tanks (75 ft diam) 1 cylindrical tank (40 ft diam)
F-1	Probable Dewaxing (Paraffin) Plant	1 large vented dewaxing building 5 cylindrical tanks (60 ft diam) 4 cylindrical tanks (40 ft diam) 2 cylindrical tanks [redacted] 25X1 4 unidentified buildings

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Area	Functional Description	Equipment
F-2	Gas Processing Area (Light Ends)	8 large vertical processing units 3 small vertical processing units 1 compressor building 1 bank of condensers/heat exchangers/ cooling coils/accumulators 1 control house 2 unidentified buildings
G-1	Shell Stills	4 covered shell still batteries
G-2	Shell Stills	1 shell still battery 1 pipe furnace 1 control house
H-1	Probable Deasphalting and Solvent Extraction Unit	5 vertical processing units 2 pipe furnaces 1 control building 6 unidentified buildings 9 cylindrical tanks (15 ft diam) 3 cylindrical tanks (20 ft diam) 4 horizontal tanks (20 ft length)
H-2	Probable Clay Treatment Area	1 processing building 5 cylindrical tanks (20 ft diam) 6 cylindrical tanks (15 ft diam)
I-1	Steam Plant	Boiler house with 1 large stack
I-2	Probable Treating Area	14 unidentified buildings 6 cylindrical tanks (20 ft diam) 4 cylindrical tanks (15 ft diam) 12 horizontal tanks (30 ft length) 4 horizontal tanks (40 ft length)
J-1	Probable Canning Plant (Lubricating Oil)	1 processing building 2 warehouses
J-2	Finished Products Storage	2 storage buildings 2 cylindrical tanks (75 ft diam) 2 cylindrical floating-top tanks [redacted] 25X1 1 cylindrical tank (50 ft diam) 4 cylindrical tanks (20 ft diam) 12 cylindrical tanks [redacted] 25X1 3 cylindrical tanks 7 unidentified buildings

[redacted] 25X1

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Area	Functional Description	Equipment
K-1	Possible Grease Plant	14 unidentified buildings 3 cylindrical tanks (20 ft diam) 4 cylindrical tanks (15 ft diam) 6 horizontal tanks (30 ft length) 2 cylindrical tanks (10 ft diam)
K-2	Probable Vacuum Distillation Unit	4 vertical processing units 1 pipe furnace 1 compressor building 1 probable control house 2 unidentified buildings
L-1	Probable Thermal Cracking Unit	4 vertical processing units 1 pipe furnace 1 probable compressor/furnace building 1 warehouse 1 unidentified processing building
L-2	Probable Gas Processing Area (Polymerization or Alkylation)	2 vertical processing units 1 pipe furnace 2 compressor buildings 10 horizontal pressure tanks (30 ft long) 2 horizontal pressure tanks (40 ft long) 1 horizontal pressure tank (20 ft long) 1 control building 5 unidentified buildings 2 cylindrical tanks (10 ft diam)
M-1	Storage Area	6 storage buildings
M-2	Cooling Facility	1 spray pond
N-1	Shale Oil Retort	1 large retort building containing 6 complete shale oil extraction units. Each unit contains 20 retorts. All 6 units are served by 2 exhaust stacks. 22 vertical processing units 1 primary shale crushing building 1 secondary crushing and screening building 1 ash bunker 4 probable control buildings Several unidentified buildings
N-2	Crude Oil Storage	2 cylindrical tanks (70 ft diam) 2 cylindrical tanks [redacted] 25X1
O-1	Steam Plant	1 boiler house with large stack 4 cooling towers 5 unidentified buildings [redacted] 25X1

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Area	Functional Description	Equipment
O-2	Ammonium Sulfate Plant	1 ammonium sulfate production building 1 large rail-served warehouse
P-1	Administrative Area	1 administration building 1 storage building
P-2	Electrical Power Sub-station	
Q-1	Unidentified Processing Area	1 large processing building 2 small processing buildings
Q-2	Sulfuric Acid Plant (Chamber Process)	1 crushing and receiving building 2 probable chamber buildings 1 probable tower building 1 probable roaster building Several unidentified buildings 2 sulfuric acid tanks
R-1	Storage Area	2 large storage buildings 2 small unidentified buildings
R-2	Shale Oil Retort	1 large retort building containing 4 complete shale oil extraction units. Each unit contains 20 retorts served by a tall exhaust stack. 24 vertical processing units 1 primary shale crushing building 1 secondary crushing building 1 screening building 1 ash bunker 4 control buildings 2 large venturi cooling towers Several unidentified buildings
S-1	Steam Plant	1 Boiler house with 4 stacks
S-2	Crude Oil Storage	3 cylindrical tanks (100 ft diam) 1 cylindrical tank (45 ft diam) 3 cylindrical tanks (40 ft diam) 1 cylindrical tank (35 ft diam)
T-1	Ammonium Sulfate Plant	1 ammonium sulfate production building 1 large rail-served warehouse
T-2	Sulfuric Acid Plant (Chamber Process)	1 crushing and receiving building 1 probable chamber building 1 probable tower building 1 probable roaster building 2 sulfuric acid tanks 12 unidentified buildings

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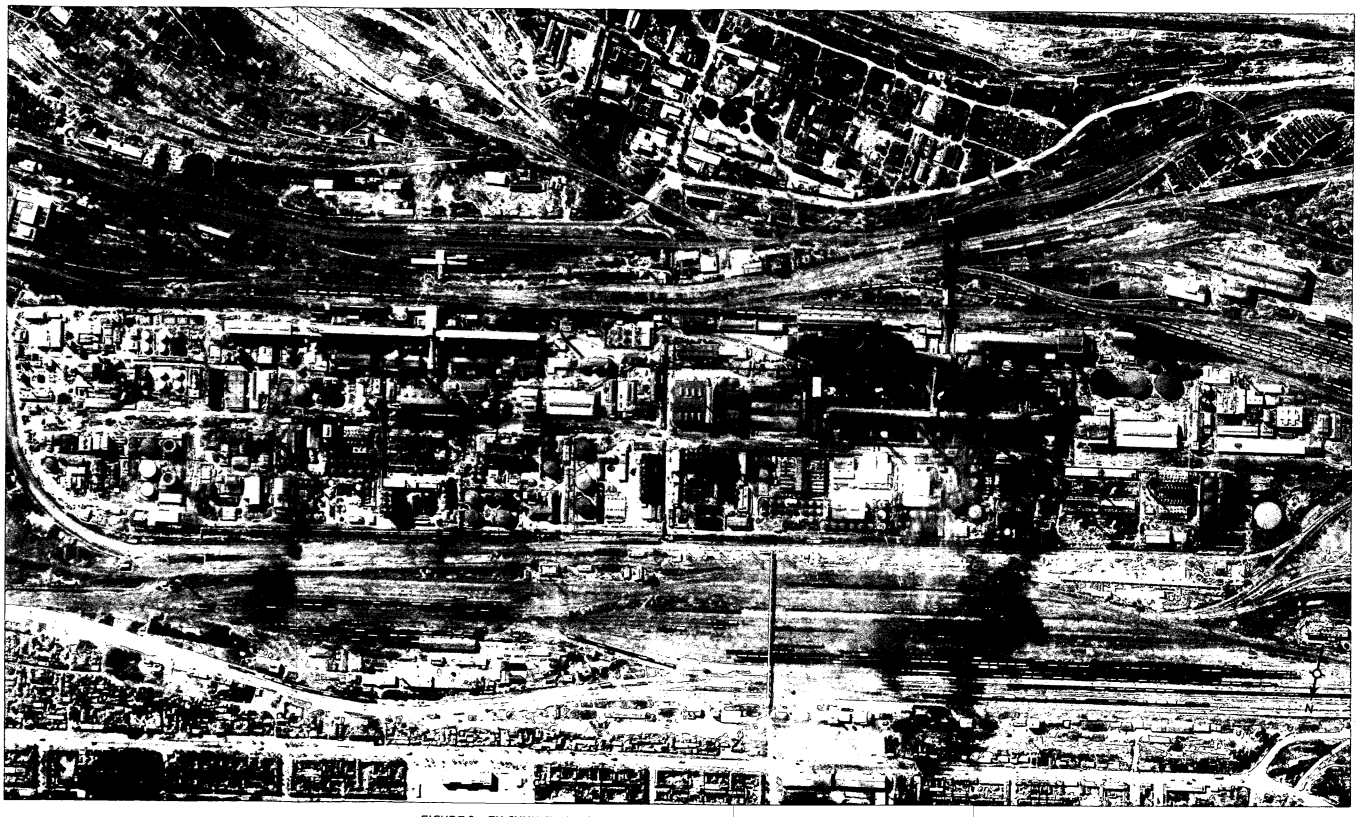

FIGURE 2. FU-SHUN SHALE OIL PLANT WEST, CHINA.

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AREA	DESCRIPTION
A 1	CRUDE OIL STORAGE
A 2	SITE OF FORMER SHELL STILLS
B 1	SHELL STILLS
B 2	PROBABLE DEASPHALTING AND SOLVENT EXTRACTION AREA
C 1	PROBABLE DEWAXING (PARAFFIN) PLANT AND FINISHED PRODUCT STORAGE
C 2	PROBABLE CLAY TREATMENT FACILITIES
D 1	POSSIBLE TREATING FACILITY
D 2	GAS PROCESSING AREA (LIGHT ENDS)
E 1	COOLING FACILITY
E 2	PRODUCTS SHIPPING AND STORAGE
F 1	PROBABLE DEWAXING (PARAFFIN) PLANT
F 2	GAS PROCESSING AREA (LIGHT ENDS)
G 1	SHELL STILLS
G 2	SHELL STILLS
H 1	PROBABLE DEASPHALTING AND SOLVENT EXTRACTION UNIT
H 2	PROBABLE CLAY TREATMENT AREA
I 1	STEAM PLANT
I 2	PROBABLE TREATING AREA
J 1	PROBABLE CANNING PLANT (LUBRICATING OIL)
J 2	FINISHED PRODUCTS STORAGE
K 1	POSSIBLE GREASE PLANT
K 2	PROBABLE VACUUM DISTILLATION UNIT
L 1	PROBABLE THERMAL CRACKING UNIT
L 2	PROBABLE GAS PROCESSING AREA (POLYMERIZATION OR ALKYLATION)
M 1	STORAGE AREA
M 2	COOLING FACILITY
N 1	SHALE OIL RETORT
N 2	CRUDE OIL STORAGE
O 1	STEAM PLANT
O 2	AMMONIUM SULFATE PLANT
P 1	ADMINISTRATIVE AREA
P 2	ELECTRICAL POWER SUB-STATION
Q 1	U/I PROCESSING AREA
Q 2	SULFURIC ACID PLANT
R 1	STORAGE AREA
R 2	SHALE OIL RETORT
S 1	STEAM PLANT
S 2	CRUDE OIL STORAGE
T 1	AMMONIUM SULFATE PLANT
T 2	SULFURIC ACID PLANT

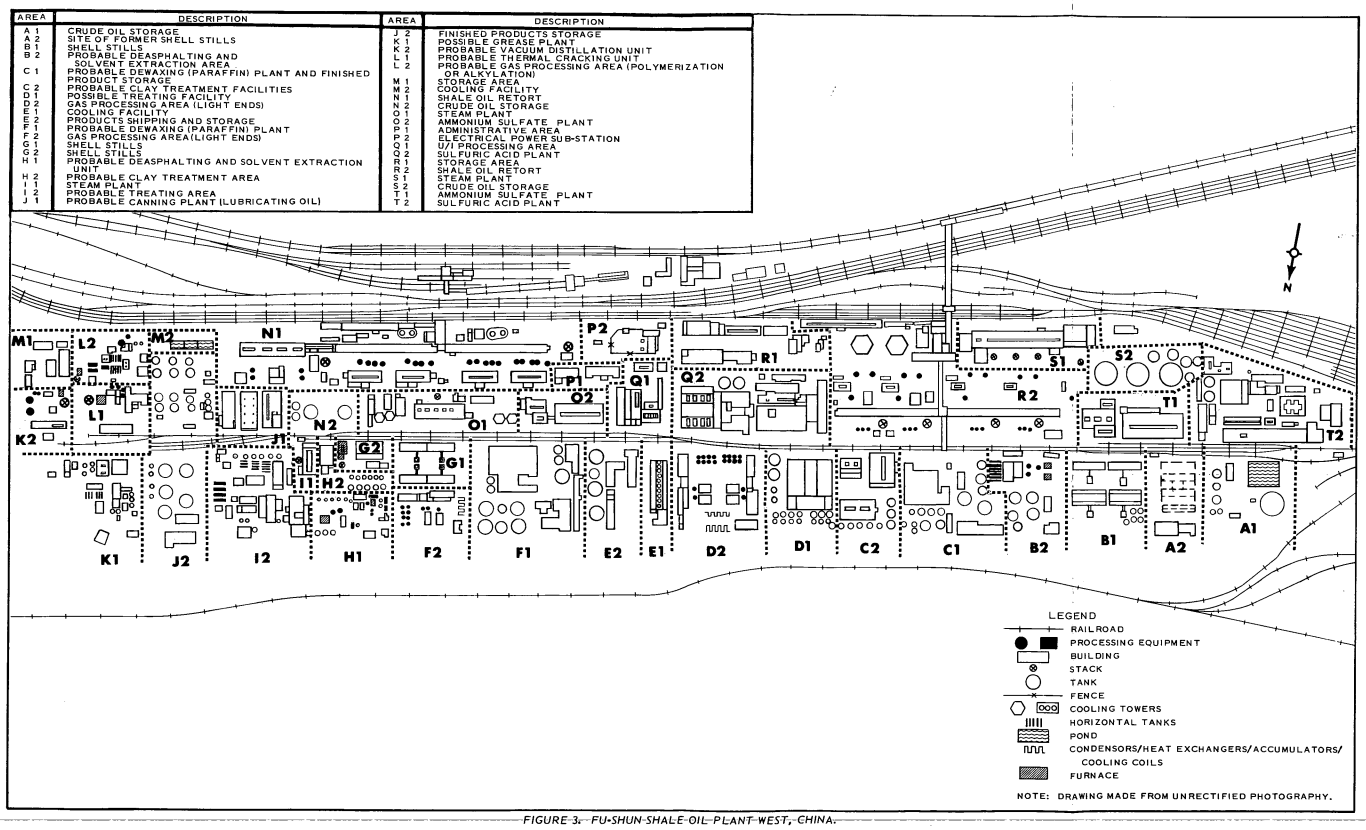

FIGURE 3. FU-SHUN SHALE OIL PLANT WEST, CHINA.

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REFERENCES

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Map

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US Air Target Chart 200, Sheet M0290-11HL, 4th edition, January 1966, Scale 1:200,000 (SECRET

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Documents

1. China-Industries, Fu-shun Shale Oil Plant West (NE No. 1 Petroleum Refinery), April 1968 (SECRET)

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Requirement

EXSUBCOM-BR-N/002-69

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[redacted]